Πανεπιστήμιο Κύπρου

The Department of Physics at the University of Cyprus
is organizing a seminar on

Thursday, 28 of September 2017, time 5:00 p.m.

Room B228, Building 13, New Campus

Speaker:

Dr. Panagiotis Keivanidis

Department of Mechanical Eng. and Materials Science and Eng. ,
Cyprus University of Technology

"Solid-state organic composites for photon up-converting applications: addressing the role of intermolecular interactions"

The use of solid-state organic composites in photon energy up-converting applications is increasingly gaining attention thereby adding a new dimension in the general effort to develop state-of-the-art light-management and wavelength-shifting technologies. Particularly the case of photon energy up-conversion driven by triplet-exciton annihilation reactions is an exciting field of research that promises to unveil new aspects of exciton spin management in organic semiconductors. At present the efficiency of photon energy up-conversion in conventional solid-state organic composites is limited to the level of 1 - 3 % and it is driven by exothermic triplet-energy-transfer reactions between triplet-excited sensitizers and ground sate activators. Interestingly, an unconventional class of organic up-converters exists in which the triplet-energy-transfer from the triplet excited sensitizer to the ground sate activator is energetically forbidden, yet photon energy up-conversion is detectable even at fluence levels lower than 10 mW/cm2. In my talk I will focus on the diverse effects of enhanced intermolecular interaction in both types of conventional and unconventional solid-state up-converting composites. In the former type, severe excitonic coupling effects are negatively affecting the up-converted luminescence intensity whereas in the latter, aggregation effects are essential for the generation of photon up-converted luminescence. For both types of photon up-converters a discussion will be presented on the tuning of intermolecular interactions by simple yet powerful solution-processing protocols that enable smart engineering in their layer microstructure.

For more information please contact:
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